

Claim Amendments

Please revise the claims as follows:

--1.-2. (cancelled)

3. (previously amended) A method according to claim 17 \pm , wherein the NADH or NADPH are produced by the reduction of NAD^+ or NADP^+ by said dehydrogenase ~~a redox~~ enzyme which concomitantly oxidises a substrate.

4. (previously amended) A method according to claim 3, wherein the amount of NADH or NADPH formed is proportional to the amount of the redox enzyme present or the amount of its substrate and hence allows the detection, or quantification, of the enzyme or substrate in the sample.

5. (cancelled)

6. (currently amended) A method according to claim 17 \pm wherein the reductase is capable of accepting two electrons from NADH or NADPH.

7. (currently amended) A method according to claim 17 \pm wherein the reductase is selected from putidaredoxin reductase of the cytochrome P450_{cam} enzyme system from *Pseudomonas putida*, the flavin (FAD/FMN) domain of the $\text{P450}_{\text{BM-3}}$ enzyme from *Bacillus megaterium*, spinach ferredoxin reductase, rubredoxin reductase, adrenodoxin reductase, nitrate reductase, cytochrome b_5 reductase, corn nitrate reductase, terpredoxin reductase and yeast, rat, rabbit and human NADPH cytochrome P450 reductase or a functional derivative of any thereof.

8. (currently amended) A method according to claim 17 \pm wherein the redox active agent is $\text{Fe}(\text{CN})_6^{3-}$, $\text{Ru}(\text{NH}_3)_6^{3+}$, or ferrocenium monocarboxylic acid (FMCA).

9. (currently amended) A method according to claim 17 \pm wherein the reductase is specific for NADH.

10. (original) A method according to claim 9 wherein the reductase is a putidaredoxin reductase.

11. (currently amended) A method according to claim 17 \pm wherein the reductase is specific for NADPH.

12. (original) A method according to claim 11 wherein the reductase is the flavin domain of P450_{BM-3} or is spinach ferredoxin reductase.

13. (currently amended) A method according to claim 17 ~~±~~ which allows a monitoring of the amount of the substrate, enzyme, NADH or NADPH over time.

14. (currently amended) A method according to claim 17 ~~±~~ wherein the redox active agent is not diaphorase or an organic dye.

15. (currently amended) An electrochemical cell comprising:

(a) sample holding means;

(b) a buffered solution comprising a dehydrogenase enzyme for converting an analyte substrate to its product(s), NAD⁺ or NADP⁺, a NADH or NADPH reductase and a redox active agent; and
~~a source of reductase;~~

(c) ~~a redox active agent; and~~

~~(d)~~ means for detecting and/or quantifying any current generated.

16. (currently amended) An electrochemical cell which can be used to carry out a method for monitoring the activity of a redox enzyme in a sample, which enzyme is a dehydrogenase enzyme which uses NAD⁺ or NADP⁺ as a co-factor, or for measuring the amount of a substrate for said enzyme in a sample, which method comprises detecting the presence or absence of, or determining the concentration of, NADH or NADPH by:

(a) providing a buffered solution comprising said sample and (i) said dehydrogenase enzyme, (ii) NAD⁺ or NADP⁺, (iii) a NADH or NADPH reductase and (iv) a redox active agent; and

(b) measuring the quantity of reduced redox active agent produced by the reductase, by electrochemical means;

wherein electron transfer between the redox active agent and an electrode is correlated to the activity of the redox enzyme or the amount of the substrate,

~~as defined in claim 1,~~ wherein the electrochemical cell comprises:

- (a) sample holding means;
- (b) a buffered solution comprising a dehydrogenase enzyme for converting an analyte substrate to its product(s), NAD^+ or NADP^+ , a NADH or NADPH reductase and a redox active agent; and
~~a source of reductase,~~
- (c) ~~a redox active agent, and~~
- ~~(d)~~ means for detecting and/or quantifying any current generated.

17. (new) A method for monitoring the activity of a redox enzyme in a sample, which enzyme is a dehydrogenase enzyme which uses NAD^+ or NADP^+ as a co-factor, or for measuring the amount of a substrate for said enzyme in a sample, which method comprises detecting the presence or absence of, or determining the concentration of, NADH or NADPH by:

- (a) providing a buffered solution comprising said sample and (i) said dehydrogenase enzyme, (ii) NAD^+ or NADP^+ , (iii) a NADH or NADPH reductase and (iv) a redox active agent; and
- (b) measuring the quantity of reduced redox active agent produced by the reductase, by electrochemical means;

wherein electron transfer between the redox active agent and an electrode is correlated to the activity of the redox enzyme or the amount of the substrate.

18. (new) An electrochemical cell comprising:

- (a) sample holding means;
- (b) a mixture of enzymes and redox agent obtainable by drying a buffered solution comprising a dehydrogenase enzyme for converting an analyte substrate to its product(s), NAD^+ or NADP^+ , a NADH or NADPH reductase and a redox active agent; and
- (c) means for detecting and/or quantifying any current generated.

19. (new) An electrochemical cell which can be used to carry out a method for monitoring the activity of a redox enzyme in a sample, which enzyme is a dehydrogenase enzyme which uses NAD^+ or NADP^+ as a co-factor, or for measuring the

amount of a substrate for said enzyme in a sample, which method comprises detecting the presence or absence of, or determining the concentration of, NADH or NADPH by:

(a) providing a buffered solution comprising said sample and (i) said dehydrogenase enzyme, (ii) NAD^+ or NADP^+ , (iii) a NADH or NADPH reductase and (iv) a redox active agent; and

(b) measuring the quantity of reduced redox active agent produced by the reductase, by electrochemical means;

wherein electron transfer between the redox active agent and an electrode is correlated to the activity of the redox enzyme or the amount of the substrate, wherein the electrochemical cell comprises:

(a) sample holding means;

(b) a mixture of enzymes and redox agent obtainable by drying a buffered solution comprising a dehydrogenase enzyme for converting an analyte substrate to its product(s), NAD^+ or NADP^+ , a NADH or NADPH reductase and a redox active agent; and

(c) means for detecting and/or quantifying any current generated.